

- Sub J 4
F4
cont
- (f) coupling capacitors electrically coupled together wherein a capacitance of the capacitors coupled together has a combined reduced capacitance of less than 5 microfarads wherein the combined reduced capacitance of less than 5 microfarads attenuates afterpotentials which result due to the application of the pacing stimulus to the heart by said cardiac pacing system, said capacitors being electrically coupled to said pacing circuit; and
- (g) wherein the evoked response is sensed between two of said electrodes.

Sub J 5
F5

29(Twice Amended). The cardiac pacing system as recited in claim 19, wherein the signal associated with the evoked response is sensed between the atrial tip electrode and the electrically conductive housing of the cardiac pacing system.

30(Twice Amended). The cardiac pacing system as recited in claim 19, wherein the signal associated with the evoked response is sensed between the atrial ring electrode and the electrically conductive housing of the cardiac pacing system.

Sub F6
J6

32(Twice Amended). The cardiac pacing system as recited in claim 19, wherein the signal associated with the evoked response is sensed between the ventricular ring electrode and the electrically conductive housing of the cardiac pacing system.

33(Twice Amended). The cardiac pacing system as recited in claim 19, wherein the signal associated with the evoked response is sensed between the ventricular tip electrode and the electrically conductive housing of the cardiac pacing system.

REMARKS

In accordance with the above amendments, claims 1, 11, 12, 14, 15, 19, 29, 30, 32 and 33

have been rewritten. Thus, claims 1, 3-19 and 21-36 remain under consideration in the present application. No claim has been allowed.

The amendments to the claims have been directed to overcoming claim objections and claim rejections under 35 U.S.C. § 112, 2nd paragraph with respect to the claims that have been amended. It is believed that if the requested amendments are, in fact, entered that the issues regarding 35 U.S.C. § 112 will be resolved.

It is further believed that, as stated in earlier remarks, the present claims do distinguish over the references on the merits. It is believed that the greatly increased versatility of the system of the present invention includes a clear inventive step over the Haefner, et al. '683 reference which clearly does not teach the concept that the evoked response can be sensed between any two of the electrodes.

The Examiner is requested to reconsider his previous position with regard to patentability of the claims and withdraw the rejection on the merits and allow the present claims.

Respectfully submitted,

NIKOLAI & MERSEREAU, P.A.



C. G. Mersereau
Registration No. 26,205
820 International Centre
900 Second Avenue So.
Minneapolis, MN 55402
Telephone: (612) 339-7461

Marked-up Version of Claims Being Amended

Please rewrite claims 1, 11, 12, 14, 15, 19, 29, 30, 32 and 33 as follows:

1. (Five Times Amended) A cardiac pacing system for use with unipolar or bipolar atrial and ventricular pacing and sensing leads, said cardiac pacing system including:
 - (a) an atrial lead having atrial electrodes comprising an atrial tip electrode and an atrial ring electrode electrically coupled thereto;
 - (b) a ventricular lead having ventricular electrodes comprising a ventricular tip electrode and a ventricular ring electrode electrically coupled thereto;
 - (c) pacing means for providing a pacing stimulus to at least one of an atrium or ventricle of a heart, said pacing means electrically coupled to at least one of said atrial lead and said ventricular lead;
 - (d) sensing means for sensing a response evoked by the pacing stimulus, said sensing means electrically coupled to at least one of said atrial lead and said ventricular lead said sensing means including multiple independent blanking switches corresponding to independent electrodes, [wherein a signal associated with the evoked response is sensed between at least one of said atrial electrodes and said ventricular electrodes];
 - (e) an indifferent electrode and [a] an electrically conductive can that contains the pacing and sensing means, said indifferent electrode being positioned on the can;
 - (f) afterpotential attenuation means for attenuating afterpotentials which result due to the application of the pacing stimulus to the heart by said cardiac pacing system, said afterpotential attenuation means being electrically coupled to said pacing means and having a reduced coupling capacitance of less than 5 microfarads; and

(g) wherein the evoked response is sensed between two of said electrodes.

11(Three Times Amended). The cardiac pacing system as recited in claim 1, [further including an electrically conductive housing that contains the pacing and sensing means,] wherein the signal associated with the evoked response is sensed between the atrial tip electrode and the electrically conductive housing of the cardiac pacing system.

12(Three Times Amended). The cardiac pacing system as recited in claim 1, [further including an electrically conductive housing that contains the pacing and sensing means,] wherein the signal associated with the evoked response is sensed between the atrial ring electrode and the electrically conductive housing of the cardiac pacing system.

14(Three Times Amended). The cardiac pacing system as recited in claim 1, [further including an electrically conductive housing that contains the pacing and sensing means,] wherein the signal associated with the evoked response is sensed between the ventricular ring electrode and the electrically conductive housing of the cardiac pacing system.

15(Three Times Amended). The cardiac pacing system as recited in claim 1, [further including an electrically conductive housing that contains the pacing and sensing means,] wherein the signal associated with the evoked response is sensed between the ventricular tip electrode and the electrically conductive housing of the cardiac pacing system.

19. (Four Times Amended) A cardiac pacing system for use with unipolar or bipolar atrial and ventricular pacing and sensing leads, said cardiac pacing system including:

- (a) an atrial lead having atrial electrodes comprising an atrial tip electrode and an atrial ring electrode electrically coupled thereto;
- (b) a ventricular lead having ventricular electrodes comprising a ventricular tip

- electrode and a ventricular ring electrode electrically coupled thereto;
- (c) a pacing circuit including a pacing charge storage capacitor that provides a pacing stimulus to at least one of an atrium or ventricle of a heart, said pacing circuit electrically coupled to at least one of said atrial lead and said ventricular lead;
 - (d) a sensing circuit that senses a response evoked by the pacing stimulus, said sensing circuit electrically coupled to at least one of said atrial lead and said ventricular lead, said sensing circuit including multiple independent blanking switches corresponding to independent electrodes[, wherein a signal associated with the evoked response is sensed between at least one of said atrial electrodes and said ventricular electrodes];
 - (e) an indifferent electrode and [a] an electrically conductive can that contains the pacing and sensing means, said indifferent electrode being positioned on the can;
 - (f) coupling capacitors electrically coupled together wherein a capacitance of the capacitors coupled together has a combined reduced capacitance of less than 5 microfarads wherein the combined reduced capacitance of less than 5 microfarads attenuates afterpotentials which result due to the application of the pacing stimulus to the heart by said cardiac pacing system, said capacitors being electrically coupled to said pacing circuit; and
 - (g) wherein the evoked response is sensed between two of said electrodes.

29(Twice Amended). The cardiac pacing system as recited in claim 19, [further including an electrically conductive housing that contains the pacing circuit and sensing circuit,] wherein the signal associated with the evoked response is sensed between the atrial tip electrode and the electrically conductive housing of the cardiac pacing system.

30(Twice Amended). The cardiac pacing system as recited in claim 19, [further including an electrically conductive housing that contains the pacing and sensing means,] wherein the signal associated with the evoked response is sensed between the atrial ring electrode and the electrically conductive housing of the cardiac pacing system.

32(Twice Amended). The cardiac pacing system as recited in claim 19, [further including an electrically conductive housing that contains the pacing circuit and sensing circuit,] wherein the signal associated with the evoked response is sensed between the ventricular ring electrode and the electrically conductive housing of the cardiac pacing system.

33(Twice Amended). The cardiac pacing system as recited in claim 19, [further including an electrically conductive housing that contains the pacing circuit and sensing circuit,] wherein the signal associated with the evoked response is sensed between the ventricular tip electrode and the electrically conductive housing of the cardiac pacing system.